REP 1997-097

Express/Shuttle UPDATE

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Caution Deer Crossing, They May Be Trespassing on Your Airport

While deer/car collisions are common in the United States, many people are unaware that a number of deer/plane strikes also take place. Since 1983 there have been 245 deer related accidents reported, most of which resulted in serious damage to the aircraft. The actual number of accidents is probably much higher than this because many accidents are not reported. The data for this article was taken from two sources, the FAA Bird Strike Database and the National Transportation Safety Board (NTSB) Aviation Accident Database. The first relies on voluntary reporting of strikes by pilots and other aviation personnel; the second is information collected during investigations of accidents or incidents involving civil aircraft by the NTSB.

We know that many strikes with wildlife are not reported for various reasons, and estimate that 80% of these strikes may be unreported. Until the FAA Bird Strike Reporting Form 5200-7 was changed to include other wildlife, only bird strikes were reported, leaving us with an incomplete picture of deer strikes in the years before 1990.

Deer and other wild ungulates (hoofed mammals) inhabit all 50 states. Species include the white-tailed deer, mule deer, moose, and elk. The white-tailed deer, which is primarily an eastern species, has been the most commonly struck ungulate. An adult white-tailed deer weighs anywhere from 100 pounds to a record 511 pounds, with an average weight of around 125 pounds. Deer run at speeds up to 36 mph. Although deer prefer to crawl under fences, if disturbed, they will easily jump a seven-foot fence from a standstill or an eight-foot fence with a running start.

Deer often travel in family groups of does and fawns. Males generally stay to themselves and only associate with females during the fall breeding season, also known as the rut. In much of North America the rut peaks in November. In southern states, which have a longer growing season, deer breed over a longer period of time.

DEER ARE INCREASING

There has been a dramatic increase in the deer population in the United States in recent years. At the turn of the century, deer had almost been hunted to extinction with only about 100,000 remaining, but they now number about 24 million.

Airports often are situated in outlying areas and are frequently surrounded by good deer habitat. Landing fields provide prime locations for grazing because they are planted with grasses and other plants that attract deer. Deer, in and around airports, should be a concern for pilots and airport managers because 83% of aircraft-mammal strikes are caused by deer.

FEMALES ON THEIR MIND

The worst month for deer-related incidents is November, when the deer are on the move because of the rutting season. Young males are often being chased off by adult bucks who are also busy courting does. These distractions are believed to be the reason that one-fourth of all deer accidents occur at this time.

WORST TIME TO FLY

Deer are most active in the twilight hours and at night when they feed. That is not to say that you won't see deer during the day, just that they are usually resting at this time. As you might guess, deer strikes with aircraft occur most often at dusk (47 strikes per hour) and at night (11 strikes per hour) when deer are most difficult to see. For example, one unfortunate pilot noticed a vague shape off the right side of the aircraft during take-off on a dark night. He continued down the runway until his Piper PA-32R collided with an 180-pound deer.

Another pilot reported that a deer ran in front of his Cessna 172 during the flare for a night landing. The prop hit and killed the deer and the nose gear and bottom of the engine

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compartment were damaged. After the collision, the pilot smelled fuel fumes. When the front of the plane started sliding on the runway, a fire developed which destroyed the aircraft.

It was dusk when a Cessna 421 struck two deer. Although the pilot was not injured, the plane received substantial damage. The landing gear strut collapsed causing both props to hit the runway. The Cessna came to a stop on its main landing gear and the bottom of the fuselage just aft of the nose. The airport was closed for two and a half hours to clear the runway.

ACCIDENTS WHILE AVOIDING DEER

Some accidents were caused, not by actually hitting the deer, but by the pilot trying to avoid deer on the runway. These accidents occurred most often during the day (47%) when the pilot was able to see the deer, but still resulted in 89% of the aircraft involved sustaining some degree of damage.

One such incident occurred in Georgia when a pilot reported that he was landing the airplane in a strong left crosswind. As the airplane touched down, a deer darted across the runway. The pilot swerved abruptly to avoid the deer, but was unable to recover directional control. The left wing dragged the ground and the airplane nosed over when it rolled into a shallow, wide ditch. Luckily, there were no injuries, but the plane was damaged substantially.

Another pilot, in his attempt to avoid a collision, caused the airplane to veer off the right side of the runway into a stand of trees. He probably would have had a better chance with the deer-at least it might have moved!

DEER TAKE THEIR TOLL

The aircraft was damaged in 81% of all reported deer strikes, and in half of those strikes the damage was substantial. Reports rarely showed the cost of deer related damage: only 12% of the reports indicating damage provided estimates of the cost of repairs and time out of service. Based on the numbers from the strike reports providing damage estimates, the average deer strike cost was $96,800. (Note that this amount does not include accidents from avoiding deer). If we multiply this by the 170 reported damaging strikes, we can estimate that the total cost since 1983 would be $16,456,000.

State	# of Reported Strikes
PA	26
WV	23
MI	18
NY	17
NJ	16
WI	9
VA	8
CT	7
MD	7
OH	6

Top 10 States for Deer Strikes

Remember that only about 20% of all strikes are reported, so the real total is much higher. Also, none of the strikes in the NTSB database (30% of the total), which were all substantial, had figures for damage.

The most expensive strike reported was to a Hawker-Siddeley worth $1.4 million. The 100 mph-impact tore the engine loose.

THE INVISIBLE DEER

Sometimes pilots might not see the deer or realize one was hit. For example, an instructor pilot was demonstrating night landings to his student when the aircraft veered to the right on touchdown. The instructor thought that the student was on the right rudder, but failed to override him by applying left rudder. The real story wasn't discovered until the next morning. The aircraft had collided with a deer on touchdown and had dragged the deer some distance with the right main gear. This strike, not the student pilot, was what caused the aircraft to veer to the right.

WHAT IS BEING DONE?

What can be done to prevent future deer strikes? Airport managers can request help from professional wildlife biologists who will then assess each airport's particular situation and provide recommendations to solve their problem. In many cases, habitat modification to remove nearby wooded or brushy areas is all that is necessary.

At the present time, chasing deer off runways with a vehicle before takeoffs and landings is the most widely used method. Noise makers are only effective for short periods of time, because deer grow accustomed to them. Harassment and pyrotechnics are used at some airports and have proven to be only partially successful. This is not practical 24 hours a day and not all deer respond to these deterrents.

Fencing has been an effective, but expensive, management tool for excluding deer. Fences must either be between eight and ten feet tall or, if shorter, electrified. All fences must be maintained so that deer cannot crawl under them. Cattle guards (bars of narrowly spaced steel rod) must be in place at entrances. Smaller airports cannot afford this type of protection. FAA regulations do not require airports to have a fence but only require them to take precautions against entry of large domestic animals onto air operations areas.

Supplemental feeding away from runways or the use of scent repellents can move deer away

from the runways. Feeding only works when other food sources are low or unavailable. However, feeding the deer encourages them to stay in the vicinity.

Repellents are needed in large amounts, are expensive and time consuming to apply, and require continuous reapplication. Generally they are not practical.

Deer can be captured and relocated. However, this is labor intensive, can be dangerous, and stresses the deer causing a low survival rate. Deer are extremely territorial and don't do well when placed into new surroundings. Transporting them is just too traumatic. It is also difficult to find new locations that are not already saturated with deer. Furthermore, it is unlikely that all deer can be removed this way.

In recent years several U.S. airports have had to resort to having hunters shoot deer on airports because of the number of deer on the airport property. The number one issue is to enhance airport safety.

REPORT YOUR STRIKES

If you are involved in a deer or other wildlife strike accident, be sure to fill out the FAA Form 5200-7 which can be obtained from local FAA offices, airports, and the AIM, Appendix 1. With the help of people reporting all wildlife strikes, we will eventually have a strong database which can be used to assist wildlife biologists and airport managers to prevent, or at least greatly reduce, future strikes.

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Reprinted from *FAAviation News*, Nov/Dec 1996

Let us hear from you on safety issues that you would like to see discussed on the Express and Shuttle pages of *Safety On Line*. We can be reached through any of the following methods:

- **E-mail: MCADOO@USAIRWAYS.COM**
- **PROFS: MCADOO**
- **FAX: (412) or Dialnet 747-3288**
- **Voice-mail: (412) or Dialnet 747-1688**

We can also be contacted through the Director of Safety at your carrier.

Recently I was departing from Houston on runway 14L and the departure controller issued a climb clearance below 10,000 that included the terminology "speed unrestricted". Upon further clarification we were told that we could go as fast as we wanted. I thought exceeding 250 knots below 10,000 feet was a violation of the FARs.

Terry Hanson
B737-200 F/0 CLT

The subject of exceeding 250 knots below 10,000 feet has been covered in a previous issue of *Safety On Line* and is covered in the FARs. Houston's George Bush Intercontinental Airport, however, has been issued a special waiver and is the official test facility that has been authorized to issue higher speeds to aircraft below 10,000 feet when departing airports within IAH approach airspace. The test is being conducted to research the use of higher speeds in areas with restricted Class B airspace like Houston's. Houston has reported that the procedure is working quite well so far and it is anticipated that more test cites will be commissioned at some of the larger airports in the future. For planning purposes you should be aware that flying unrestricted speeds below 10,000 feet in the Houston airspace can ONLY be issued by the departure controller and CAN NOT be requested by the pilot.

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